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## Rare case of *Nocardia otitidiscavirum* septicemia with complicated loculated empyema in an immunocompetent patient

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**Introduction:** *Nocardia* species are aerobic, catalase-positive, partially acid-fast bacteria found in the environment. While infections are typically opportunistic and seen in immunocompromised individuals, rare cases may be present in immunocompetent patients. *Nocardia otitidiscaviarum* is an uncommon species associated with pulmonary infections and, even more rarely, septicemia. This report presents a unique case of *N. otitidiscaviarum* septicemia with complicated loculated empyema in an immunocompetent patient, highlighting diagnostic challenges and management considerations.

**Methods:** This is a single-patient case report. Clinical presentation, diagnostic imaging, microbiologic studies, and surgical intervention data were retrospectively reviewed. Diagnostic techniques included thoracentesis, Video-assisted thoracoscopic surgery (VATS), and microbiologic culture with species identification. Blood cultures, pleural fluid analysis, and transthoracic and transesophageal echocardiograms were utilized to assess for systemic spread, including endocarditis.

**Results:** A 78-year-old immunocompetent woman presented with sepsis and hypoxia. Imaging revealed right-sided loculated pleural effusion. Initial thoracentesis was nondiagnostic. VATS decortication drained 900 cc of purulent fluid and revealed pleural abscesses. Cultures of pleural fluid and blood grew *N. otitidiscaviarum.* The patient was treated with trimethoprim-sulfamethoxazole (TMP-SMX) and meropenem. Echocardiograms ruled out endocarditis. Following intervention, the patient's acute metabolic encephalopathy resolved, and she demonstrated significant clinical improvement.

**Conclusion:** This case highlights *Nocardia* septicemia accompanied with empyema, though rare, can occur in immunocompetent individuals. Early recognition of atypical pathogens like *N. otitidiscaviarum* is critical, particularly in nonresolving pulmonary infections. Effective treatment often includes a combination of antibiotic therapy such as TMP-SMX, imipenem-cilastatin, and surgical drainage are essential for recovery. Clinicians should maintain a high index of suspicion for nocardiosis in patients with complicated pneumonia or empyema, regardless of immune status, to prevent delays in appropriate treatment.

## Association between GLP-1 receptor agonist use and mortality among COPD patients

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**Introduction:** Glucagon-like peptide 1 (GLP-1) receptor agonists are novel antihyperglycemic drugs that have shown benefit in cardiovascular and renal disease. Observational studies show an association between GLP-1 agonist use and reduced exacerbations of chronic obstructive pulmonary disease (COPD). We examined the association between GLP-1 agonist use and mortality of patients with COPD in a large sample size.

**Methods:** In this retrospective case-control study, we identified patients with COPD from a data base of patients at our institution. We then identified patients who had COPD and had GLP-1 agonist administered after their diagnosis of COPD and compared them with patients who never received a GLP-1 agonist. Data are displayed as median with interquartile range, and a Kaplan-Meier curve was used for mortality analysis.

**Results:** 186,985 patients with COPD who had not received a GLP-1 agonist and 1877 patients who had received a GLP-1 agonist were identified. The median age for patients in the GLP-1 group was 68.8 versus 60.3 for the control group; 49% of patients in the GLP-1 group were female compared with 48% in the control; 80% were obese, with a mean BMI of 32.5 compared with 26.5% in the control group; 89% had type 2 diabetes mellitus versus 28% in the control group. Patients who received a GLP-1 agonist had improved survival at 1, 5, 10, 30, and 60 months compared with patients who never received a GLP-1 agonist, $p < 0.001$, hazard ratio 7.13 (95% confidence interval, 5.66–8.99).

**Conclusion:** GLP-1 agonists were associated with improved survival in patients with COPD. This may be due to improved cardiovascular mortality. Further studies are needed to elucidate the mechanisms behind this association.

## Safety of opioids in idiopathic pulmonary fibrosis

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**Introduction:** Idiopathic pulmonary fibrosis (IPF) is often associated with breathlessness, adversely affecting quality of life and life expectancy. While opioids have been recommended in patients with interstitial lung disease for refractory dyspnea, the safety and adverse events of use of opioids in IPF remain largely unexplored. Moreover, there are unclear data on other associated factors affecting mortality and health-care utilization in IPF patients on opioids.

**Methods:** We conducted a retrospective cohort study through TriNetX, which is the global federated health research network providing access to electronic medical records of over 111 million unique patients in the United States. Patients with a new IPF diagnosis who received opioids at three or more visits were included as meeting criteria for long-term opioid use. Outcomes were compared between matched cohorts of IPF patients on long-term opioids and those not on opioids. Each cohort had 985 patients each after propensity score matching (PSM). Primary end points analyzed include emergency department (ED) visits, inpatient admissions, critical care admissions, and death. The secondary outcomes included opioid use disorder (OUD) and opioid poisoning. Multivariate covariate analysis was done by using Cox proportional hazard model.

**Results:** After PSM, both groups were well balanced. Risk analysis revealed that patients with IPF who were on long-term opioids had a higher likelihood of ED visits (RR 4.23 [95% CI, 3.38–5.30]), inpatient admissions (RR 6.57 [95% CI, 5.42–7.96]), and critical care admissions (RR 21.0 [95% CI, 13.0–33.9]). Long-term opioid use in IPF patients was associated with an increased risk of mortality (RR 3.16 [95% CI, 2.64–3.80]). However, there was no statistically significant increase in the risk for OUD and opioid poisoning. Males and patients with heart failure, chronic respiratory failure, acute on chronic respiratory failure, BMI < 19.9 $kg/m^2$, and secondary pulmonary hypertension were found to have higher mortality risk, while higher BMI (30–39, >40 $kg/m^2$) and GERD were found to be protective.

**Conclusion:** Long-term opioid use in IPF is associated with higher health-care utilization and mortality, without a significant rise in OUD or opioid poisoning. These findings highlight the need for cautious and individualized opioid prescribing in this population and underscore the importance of further research to clarify the role of opioids in symptom management for IPF.

## Ensifentrine monotherapy improved lung function, symptoms, quality of life, and reduced exacerbation rate and risk in symptomatic patients with moderate-to-severe COPD

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**Introduction:** Despite the availability of multiple therapies for the maintenance treatment of COPD, many patients remain treated with short-acting bronchodilators alone. Ensifentrine is a novel dual inhibitor of phosphodiesterase (PDE)3 and PDE4 with bronchodilation and nonsteroidal anti-inflammatory effects. Here, the effect of ensifentrine monotherapy is evaluated in a *post hoc,* pooled analysis of the ENHANCE program.

**Methods:** Two phase 3, global, multicenter, randomized, double-blind, placebo controlled trials were conducted in symptomatic, moderate-to-severe COPD patients aged 40–80 ($FEV_1$ 30–70% predicted; $FEV_1/FVC < 0.7$; mMRC ≥ 2). Patients received ensifentrine 3 mg or placebo twice daily. Short-acting bronchodilators were permitted to treat symptoms as needed: permitted long-acting medications included

LAMA or LABA, ± ICS. The primary end point was the average $FEV_1$ $AUC_{0\text{-}12h}$ at week 12. Secondary end points included transition dyspnea index (TDI), evaluating-respiratory symptoms (E-RS) total score, and St. George's Respiratory Questionnaire (SGRQ) total score at weeks 6, 12, and 24. Rate and risk (time to first) of moderate/severe exacerbations were evaluated over 24 weeks.

**Results:** The pooled analyses included 975 ensifentrine-treated and 574 placebo-treated patients. The subgroup without concomitant maintenance medication included 369 ensifentrine-treated and 222 placebo-treated patients. Ensifentrine improved lung function vs placebo at week 12 (placebo-corrected least-squares mean: average $FEV_1$ $AUC_{0\text{-}12h}$ = 93 mL; $p < 0.05$). TDI was significantly greater at all time points and E-RS and SGRQ were improved at all time points with ensifentrine monotherapy vs placebo. At 24 weeks, moderate/severe exacerbation rate was reduced by 40% with ensifentrine vs placebo (rate ratio 0.60 [95% CI, 0.35–1.02]; $p = 0.058$) and risk was reduced by 32% with ensifentrine vs placebo (hazard ratio 0.68 [95% CI, 0.41–1.14]; $p = 0.140$).

**Conclusion:** Ensifentrine monotherapy improved lung function, symptoms, quality of life, and reduced exacerbation rate and risk vs placebo. Ensifentrine offers a novel, nonsteroidal, anti-inflammatory mechanism of action that provides meaningful benefits in patients with symptomatic, moderate-to-severe COPD.

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## Ensifentrine reduced exacerbation rate regardless of $FEV_1$ improvement: A *post hoc* pooled analysis

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**Introduction:** Ensifentrine is a novel dual phosphodiesterase (PDE)3 and PDE4 inhibitor with bronchodilation anti-inflammatory effects. The phase 3 ENHANCE program demonstrated improvements with ensifentrine in lung function and exacerbations in patients with COPD. To evaluate whether the dual mechanism of ensifentrine results in an independent relationship between $FEV_1$ and exacerbation results, we analyzed the effect of ensifentrine on exacerbation rate with different $FEV_1$ change from baseline (CFB) thresholds in a *post hoc* analysis.

**Methods:** The ENHANCE program included two global, multicenter, randomized, double-blind, placebo controlled trials of patients age 40–80 with symptomatic, moderate-to-severe COPD ($FEV_1$ 30–70% predicted, mMRC ≥ 2). Patients received ensifentrine 3 mg or placebo twice daily. Stable background maintenance medication included LABA or LAMA, ±ICS. The primary end point was the change from baseline to week 12 average $FEV_1$ $AUC_{0\text{-}12h}$. The moderate/severe exacerbation rate was evaluated over 24 weeks. Here, the moderate/severe exacerbation rate of ensifentrine vs placebo was evaluated in patients with a week 12 CFB in $FEV_1$ $AUC_{0\text{-}12h}$ of ≥/<100 mL, ≥/<60 mL, and ≥/<40 mL.

**Results:** The pooled analyses included 975 ensifentrine-treated and 574 placebo-treated patients. Over 24 weeks, ensifentrine treatment resulted in a reduction in the exacerbation rate of 33% ($p = 0.26$) and 38% ($p = 0.008$) vs placebo for patients with a $FEV_1$ $AUC_{0\text{-}12h}$ CFB ≥ 100 mL and < 100 mL, respectively; a reduction of 35% ($p = 0.02$) and 36% ($p = 0.13$) for CFB of <60 mL and ≥60 mL, respectively; and a reduction of 32% ($p = 0.053$) and 42% ($p = 0.04$) for CFB <40 mL and ≥40 mL, respectively.

**Conclusion:** Ensifentrine resulted in substantial reductions in exacerbations, regardless of the extent of lung function improvement. The reduction in exacerbation rate in patients with limited $FEV_1$ response supports that ensifentrine works through additional mechanisms such as nonsteroidal anti-inflammatory effects. Ensifentrine offers a novel mechanism of action for a broad population of patients with symptomatic, moderate-to-severe COPD.

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## Epinephrine delivered *via* sublingual film (Anaphylm) elicits rapid and consistent pharmacokinetic and pharmacodynamic responses

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**Introduction:** Epinephrine is the first-line treatment for severe allergic reactions, including anaphylaxis. Prompt, reliable treatment is critical for patient outcomes. Anaphylm is a sublingual film containing a novel prodrug of epinephrine in development for the treatment of type I allergic reactions, including anaphylaxis.

**Methods:** A phase 3 cross-over trial (AQ109301) was conducted in 64 healthy adults evaluating the pharmacokinetics (PK, including time to peak plasma concentration [$T_{max}$]) and pharmacodynamics (PD, heart rate [HR], systolic [SBP] and diastolic blood pressure [DBP]) of Anaphylm compared with epinephrine autoinjectors (EAI) and manual intramuscular (IM) epinephrine injection.

**Results:** After single-dose administration, the $T_{max}$ variability as reflected by interquartile range (IQR) was 5.0 minutes (min) for Anaphylm (median $T_{max}$ 12 min), 23.5 min for EpiPen (median $T_{max}$ 20 min), 32.0 min for Auvi-Q (median $T_{max}$ 30 min), and 15.0 min for manual IM injection (median $T_{max}$ 50 min). After Anaphylm administration, clinically meaningful changes in median SBP, DBP, and HR were seen in 5 min (>10 mm Hg), 5 min (>10 mm Hg), and 8 min (>10 bpm), respectively.

**Conclusion:** Anaphylm data demonstrates a more rapid and consistent PK profile in comparison with EAIs and IM. Moreover, Anaphylm's PD profile showed clinically relevant increases in SBP, DBP, and HR. These results further support the development of sublingual epinephrine film as a reliable needle-free alternative for the treatment of type I allergic reactions, including anaphylaxis.

**Funding:** Aquestive Therapeutics, Inc.

## Severe radiation-induced pseudomembranous tracheobronchitis following high-dose thoracic radiation for metastatic squamous cell carcinoma

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**Introduction:** Pseudomembranous tracheobronchitis (PMT) is a mucosal injury caused by proinflammatory cytokine release, leading to epithelial necrosis, submucosal inflammation, and pseudomembrane formation. While often infectious (*Aspergillus*, *Pseudomonas*, *Diphtheria*), PMT may also result from radiation, vasculitis, intubation, or chemical injuries. We present a severe case of radiation-induced PMT in a patient with metastatic squamous cell carcinoma.

**Methods:** A 55-year-old female with metastatic anal squamous cell carcinoma involving cervical, thoracic, and mediastinal lymph nodes, recently treated with 35 Gy of thoracic radiation over 7 weeks, presented with acute hypoxic respiratory failure, inspiratory stridor, and dyspnea. She was admitted to the ICU for central airway obstruction management.

**Results:** Chest CT revealed diffuse airway stenosis with circumferential thickening of the trachea, bilateral main bronchi, and bronchus intermedius, with luminal narrowing to 3.7 mm (right), 4.5 mm (left), and 2.3 mm (bronchus intermedius). Bronchoscopy showed mucosal changes and pseudomembrane formation from the subglottic area through the bronchial tree, including the RUL, distal bronchus intermedius, lingula, and LUL/LLL bifurcations. Pseudomembranes could not be mechanically removed. Bronchoalveolar lavage, endobronchial brushing, fine-needle aspiration, and biopsy revealed atypical cells and inflammation consistent with radiation injury. The patient was started on dexamethasone, high-dose vitamin E, and pentoxifylline for radiation-induced soft tissue injury. She was referred for hyperbaric oxygen therapy (HBOT), which has shown benefit in radiation-related tissue damage.

**Conclusion:** This case demonstrates a rare but critical presentation of radiation-induced PMT causing central airway stenosis. Prompt airway evaluation and multimodal therapy are essential. Though treatment options are limited, corticosteroids, vitamin E, pentoxifylline, and HBOT may offer clinical improvement.

## A rare case of a noncaseating *Mycobacterium tuberculosis* endobronchial tumor: A diagnostic challenge

Karina Gonzalez, M.D., Yanie Oliva, M.D., Christopher Fontela, M.D., Roberto Ruiz, M.D., George Yatzkan, M.D., and Robert Hernandez, M.D.

**Introduction:** Endobronchial tuberculosis (EBTB) remains a rare and often overlooked presentation of pulmonary tuberculosis (TB), particularly because it mimics malignancy. The diagnosis can be particularly challenging when bronchoalveolar lavage (BAL) samples are negative for *Mycobacterium tuberculosis* (MTB), despite suspicious imaging and pathologic findings. We present a diagnostically complex case of EBTB with presumed lymphatic and cutaneous spread, ultimately diagnosed through a multimodal approach despite negative BAL cultures.

**Case Description:** A 65-year-old female, lifetime non-smoker, presented with a 3-week history of persistent cough, weight loss, and a purulent anterior cutaneous neck lesion. Imaging revealed a right middle lobe endobronchial lesion, multiple

enlarged mediastinal lymph nodes, suggestive of lymphoma or metastatic disease, and a right upper lobe pulmonary nodule. Neck CT showed bilateral necrotic lymphadenopathy in the infrahyoid neck with extensive mediastinal lymphadenopathy. Bronchoscopy revealed several nodular tumors with a large endobronchial tumor occluding 90% of the right middle lobe lumen. A biopsy of the mass showed noncaseating granulomas with extensive acute inflammation and positive acid-fast bacilli (AFB) stain, without evidence of malignancy. BAL showed only acute inflammatory cells, with a negative AFB smear, MTB complex PCR, and culture. Given high suspicion for TB, QuantiFERON-TB Gold was ordered and resulted positive, supporting the diagnosis. Ultimately, the patient's cutaneous lesion suggestive of a scrofuloderma was excised, revealing necrotizing granulomas, negative AFB stain, and resulted culture-positive for MTB complex.

**Conclusion:** This case underscores the diagnostic challenge of EBTB, particularly when less-invasive bronchoscopic sampling yields non-confirmatory results, despite pathologic findings highly suggestive of TB. Maintaining a high index of suspicion and employing a multimodal approach toward diagnosing TB, combining histopathology, PCR, culture, and extrapulmonary sampling, if appropriate, is essential when evaluating atypical pulmonary masses to ensure timely diagnosis and treatment.

## Robotic-assisted bronchoscopy in case of airway situs inversus

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**Introduction:** Situs inversus, a rare congenital mirror-image reversal of thoracic and abdominal organs, is often incidentally discovered because it is compatible with normal life expectancy. It may occur with primary ciliary dyskinesia, congenital heart disease, or gastrointestinal anomalies. In the era of navigational bronchoscopy requiring precise CT-guided airway mapping, recognizing congenital or postsurgical anatomic variations is critical. Here, we present a case of situs inversus that highlights the importance of preprocedural planning when performing bronchoscopy on complex anatomy.

**Methods:** A 47-year-old female with a history of Kartagener syndrome, bronchiectasis, dextrocardia, aright aortic arch, and abdominal situs inversus, presented for elective robotic-assisted bronchoscopy (RAB) for evaluation of abnormal CT chest. Chest CT demonstrated a left lower lobe area of focal bronchiectasis with airway thickening and nodularity and right lower lobe area of medial atelectasis. A robotic-assisted bronchoscopy utilizing the Intuitive Ion system was planned and performed.

**Results:** A virtual bronchoscopy image was generated using the planning software, which demonstrates the airway situs inversus of the entire bronchial tree. The airway showed a right mainstem bronchus as a mirror image of the normal left. The right upper lobe mirrored a typical left upper lobe, while the left upper and lower lobes mirrored normal right-sided anatomy. Pathology and cultures were negative for malignancy, and the findings likely reflected focal bronchiectasis, mucus plugging.

**Conclusion:** Implementation of robotic bronchoscopy techniques with advanced preprocedure planning is now more than ever becoming common practice for nodule biopsy. Each case should be planned carefully to prepare for the best strategic approach and to anticipate possible endobronchial pathology, case-specific risk factors, and anatomic variations. This is an extreme and interesting case of airway variation and demonstrates how planning software was successfully utilized for accurate RAB navigation.

## Rituximab-induced lung disease presenting as organizing pneumonia in a patient with stable rheumatoid arthritis

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**Introduction:** Rituximab-induced lung disease (R-ILD) is a rare complication, with most documented cases occurring in patients undergoing combination chemotherapy for hematologic malignancies. Pulmonary toxicity from rituximab monotherapy in rheumatoid arthritis (RA) remains largely underrecognized. Organizing pneumonia (OP) is an even rarer manifestation in this setting. This case adds to the limited body of literature, highlighting a clear association and recovery following drug cessation and steroid therapy.

**Case Report:** A 70-year-old Hispanic female with stable RA on rituximab monotherapy presented with an 8-month history of persistent cough and intermittent chest discomfort. Computed tomography (CT) of the chest demonstrated waxing and waning nodular opacities. Pulmonary function testing was normal. Extensive workup excluded infection, malignancy, and RA-associated interstitial lung disease. She underwent robotic bronchoscopy with transbronchial biopsy, which showed marked lymphoplasmacytic infiltrates with edema and early organization, consistent with OP. Inflammatory markers remained negative, and there were no other rheumatologic symptoms. Rituximab was discontinued and prednisone initiated, resulting in symptomatic and radiographic improvement. Follow-up imaging showed resolution of the primary lesion.

**Discussion:** Literature review confirms that R-ILD in RA is rarely reported outside of combination regimens, with OP being the dominant histopathologic pattern in delayed presentations. This case offers one of the few well-documented instances of R-ILD due to rituximab monotherapy. Clinicians should maintain a high index of suspicion for R-ILD in RA patients on rituximab who develop unexplained respiratory symptoms and imaging abnormalities.

**Conclusion:** This case illustrates a rare but treatable pathology, with a favorable response to corticosteroids upon early recognition. Our findings underscore the need for heightened awareness because most current data derive from case reports and small case series.

## A case of postcoital hemoptysis

Ramon Martinez, M.D., Winy Kujundzic, M.D., Sylvia Oleck, M.D., Shakira Payne-Blackman, M.D., David Wisa, M.D., and Jeremy Segal, M.D.

**Introduction:** Postcoital hemoptysis (PCH) is a rare phenomenon linked to underlying cardiac, respiratory, and vascular pathologies. Intercourse triggers a surge in catecholamines, resulting in abrupt increases in systemic and pulmonary vascular pressures. In susceptible individuals, this hemodynamic stress may exceed pulmonary capillary integrity, leading to alveolar hemorrhage.

**Case Study:** A 61-year-old woman with a 39 pack-year smoking history presented with a 4-month history of hemoptysis, occurring solely during sexual intercourse, specifically at orgasm. She reported two self-limited episodes without associated respiratory symptoms. Her medical history included left popliteal artery exploration (negative for entrapment), complicated by varicose vein formation and subsequent vein stripping. Physical examination was unremarkable except for increased left calf tone. Lower extremity ultrasound was negative for DVT. CTA chest ruled out pulmonary embolism and vascular malformations. Echocardiogram was remarkable for preserved LV function, RV enlargement with normal systolic function, borderline RA dilation, and trace mitral regurgitation. Vasculitis serologies were negative. Bronchoscopy showed no endobronchial abnormalities. Cryobiopsies from the right lower and middle lobes showed lung alveolar and bronchial tissue with focuses of inflammation and hemorrhage, without definitive vasculitis and capillaritis. Bronchoalveolar lavage revealed abundant hemosiderin-laden macrophages, confirmation of prior alveolar hemorrhage, with no infectious organisms or malignant cells identified.

**Discussion:** The pathophysiology of PCH is likely multifactorial. Although the initial workup was unrevealing, a dynamic right heart catheterization or stress echocardiogram may uncover occult cardiopulmonary pathology that only manifests under physiologic stress. It is unclear if prior vascular interventions and positional changes during intercourse may contribute to symptom onset. Our case underscores the unique cardiopulmonary stress of intercourse and emphasizes the need for thorough, dynamic evaluation in isolated PCH. This case study of PCH is distinguished by the acquisition of a high-quality lung cryobiopsy, which was instrumental in definitively excluding vasculitis.

## Hollowed defense: The interplay of Mounier-Kühn and *M. abscessus*

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**Introduction:** Mounier-Kühn syndrome is a rare disease of the central airways, caused by atrophy of the muscular and elastic tissues in the walls of the trachea and main bronchi. Patients typically present with recurrent lower respiratory tract infections, including non–tuberculous mycobacterial infections, due to impaired mucociliary clearance and cough mechanisms. It is most commonly diagnosed in men in the 3rd–4th decade of life. Diagnosis is based on CT scan tracheal measurements of >25 mm in coronal views and 27 mm in sagittal views in males, and of >21 mm and 23 mm in females, respectively. Posterior tracheal wall diverticula may also be seen. A biopsy, although not required for diagnosis, shows loss of elastic fibers. Treatment

involves managing underlying infections and implementing aggressive airway clearance regimens. There is rarely a role for stenting or surgical intervention.

**Case Presentation:** A 56-year-old female presented with several years of recurrent lower respiratory tract infections. She endorsed progressive hemoptysis, weight loss, and pleuritic chest pain. CT of the chest revealed dilated central airways up to 32 mm (tracheal sagittal view) as well as multifocal bronchiectasis with atelectasis and peripheral bulla. Bronchoscopy demonstrated extreme collapsibility of the central airways on expiration. Bronchoalveolar lavage grew *Mycobacterium abscessus*. She was started on an aggressive mucus clearance regimen, including nebulized hypertonic saline and chest physiotherapy as well as triple drug therapy for her *M. abscessus* infection with subsequent improvement in her symptoms.

**Discussion:** To date, only ~500 cases of Mounier-Kühn syndrome have been published in the literature. Tracheobronchomegaly may be challenging to diagnose because variations in tracheal diameter are common in imaging, and mild dilation may be overlooked. Early identification and implementation of airway clearance regimens may prevent lung parenchymal destruction and recurrent infections.

## Antisynthetase PL-12 and Sjögren's disease: An uncommon comorbidity

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**Introduction:** Antisynthetase syndrome (AS) is an idiopathic inflammatory myopathy associated with interstitial lung disease (ILD). The anti-PL12 antibody is a rare subtype in < 2% of AS and is frequently associated with ILD in 90–100% of cases. The majority of these patients present with respiratory symptoms. Sjögren's syndrome (SS) is also associated with ILD in 9–20% of cases. The overlap between AS and SS has not been well studied. We present a case of anti-PL12 antibody AS and SS overlap presenting with ILD.

**Case Presentation:** Our patient is a 53-year-old female with a history of OSA who presented to the pulmonology clinic with a chronic productive cough for 5 months. Initial treatment included antibiotics for community-acquired pneumonia, corticosteroids, and a LABA/ICS inhaler. CT chest revealed mediastinal lymphadenopathy and diffuse interstitial infiltrates with lower lobe predominance, suggestive of a non-specific interstitial pneumonia (NSIP). The patient's inhaler was upgraded to LABA/LAMA/ICS, and an autoimmune workup was initiated. Elevated anti-PL12 and anti-SSA antibodies, along with increased CRP levels, suggested AS and SS. Urgent rheumatology referral was requested. Multimodal immunosuppressive therapy with oral corticosteroids and mycophenolate mofetil will be initiated.

**Discussion:** The anti-PL12 antibody is a rare AS subtype. One study noted an overlap between AS and in 4/17 patients with positive SSA and anti-PL-12 antibodies, all presenting with NSIP. AS carries a poor prognosis due to irreversible pulmonary damage, and pulmonary involvement of SS leads to increased risk of mortality. Multimodal immunosuppressive therapy is often indicated.

**Conclusion:** There are few cases of anti-PL12 and even fewer describing an overlap syndrome with SS. The characteristics of this syndrome are not well described. Our case highlights the significance of diagnosing these patients given its implications for prognosis and treatment. Further research is warranted to explore the overlap of anti-PL12 antisynthetase syndrome and SS.

## From the skin to the lung: A case of lymphomatoid papulosis type a induced hyper-eosinophilic asthma

Justin Call, M.D., and Jose Soto Soto, M.D.

**Introduction:** Lymphomatoid papulosis (LyP) is a rare benign cutaneous polyclonal T-cell lymphoproliferative disorder of relapsing-remitting papular lesions. Often it can be associated with intermittent or persistent peripheral blood hypereosinophilia. This case discusses the development of asthma from this association and successful management.

**Case Presentation:** A 60-year-old otherwise healthy male was referred to the pulmonary clinic from dermatology for which he was seen for several months of recurring small, round erythematous lesions on his upper extremities. These lesions would appear for a few days then slowly fade and reappear in a different spot a few days to weeks later. Each appearance was accompanied by a severe dry cough that would subside as the lesions faded and then acutely worsen with each reappearance. Skin biopsy revealed lymphomatoid papulosis type A for which he started phototherapy with control of his skin lesions. Despite this, the cough persisted. His pulmonary function tests revealed a mild obstructive pattern with positive methacholine challenge. His blood count differential revealed leukocytosis with eosinophilia (6410/$\mu$L). A hyper-eosinophilia workup thus far revealed negative bone marrow biopsies for myeloid neoplasms and FIP1L1:PDGFRA genetic rearrangements. He started on a scheduled inhaler of 115 mcg fluticasone propionate/21 mcg salmeterol with dramatic improvement in his cough. He currently is initiating a trial of mepolizumab with improvement and almost complete resolution of his respiratory symptoms.

**Conclusion:** This case underscores the importance of considering systemic associations in patients presenting with dermatologic and respiratory symptoms. It illustrates how a seemingly benign cutaneous disorder, such as LyP, can be linked to hypereosinophilia and asthma, necessitating a multidisciplinary approach. Furthermore, it highlights the therapeutic role of biologic agents like mepolizumab in managing eosinophilic-driven respiratory symptoms.

## From localized tumor to lethal metastasis: A case report of myxofibrosarcoma

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**Introduction:** Myxofibrosarcoma is a rare, aggressive soft-tissue cancer. While typically developing slowly and often localized to the extremities, myxofibrosarcoma is prone to local recurrence and, less frequently, distant metastasis. This case report presents a patient with recurrent myxofibrosarcoma of the lower extremity that progressed to metastatic disease involving the lungs leading to severe respiratory failure and a fatal outcome.

**Case Presentation:** A 54-year-old female with a history of myxofibrosarcoma of the proximal left lower extremity presented with dyspnea to the emergency department. The patient had a history of myxofibrosarcoma initially diagnosed in 1999, with remission achieved after resection and adjuvant radiation therapy. Despite initial successful treatment with surgery and radiation therapy, the cancer recurred in 2015 and metastasized to the lungs. Subsequent systemic therapy with chemotherapy and targeted therapy (pazopanib) induced remission. During follow-up in 2024, surveillance CT scan revealed a significant progression of the disease with extensive pleural thickening, pleural effusion, and atelectasis of the left lung. Shortly after, the patient presented to the emergency department with increasing dyspnea and generalized weakness. She was found to have severe respiratory failure, was started on BiPAP, and transitioned to the CCU. The initial CT chest with IV contrast demonstrated a large left lower lobe pleural mass extending into the abdomen and chest wall, collapse of the left upper lobe, a large left pleural effusion, mediastinal shift to the right, and pericardial involvement from the subsequent mass. Oncology evaluation determined that the patient was ineligible for further treatment, including chemotherapy and emergency radiation due to the advanced stage of the disease. The decision was made to transition over to hospice care.

**Discussion:** This case presents a unique instance of myxofibrosarcoma with a delayed recurrence and subsequent rapid metastatic progression. While the recurrence rate for myxofibrosarcoma is generally high regardless of tumor grade, the risk of metastasis can vary based on factors such as tumor size, location, and surgical margins. The most common sites of metastasis include the lungs, pleura, lymph nodes, and skeleton. While lung involvement is common, the extent of disease progression observed in this case, including pericardial involvement, left lung collapse, and mediastinal shift, is less frequently reported.

## Bone in the lungs? Pulmonary dendriform ossification in patient with end-stage heart disease: A case report

Sikandar Khan, M.D., Ofek Raviv, M.D., John Woytanowski, M.D., and Jinesh Mehta, M.D.

**Introduction:** Pulmonary dendriform ossification (DPO) is a rare and underdiagnosed condition characterized by branching spicules of mature bone in the pulmonary interstitium. It is usually asymptomatic and found incidentally, with most pulmonary complications described in elderly men with underlying interstitial lung disease (ILD), particularly usual interstitial pneumonia (UIP). We present an unusual case of DPO in a 44-year-old male with end-stage ischemic cardiomyopathy and no primary ILD.

**Case Report:** A 44-year-old African American male with ischemic cardiomyopathy presented to the pulmonary clinic for evaluation of chronic cough and exertional dyspnea. He had been recently hospitalized for PICC line-associated septic thrombophlebitis. Computed tomography (CT) of the chest revealed bilateral noncalcified micronodules and clustered pulmonary calcifications with associated ground-glass opacities. Pulmonary function tests, including DLCO and 6-minute walk test, were normal. A bronchoscopy with BAL and transbronchial biopsy was performed. BAL showed macrophage predominance. A biopsy of the right middle lobe showed

irregular nodules of calcified bone consistent with dendriform pulmonary ossification. Infectious and autoimmune workups were negative.

**Discussion:** In comparison with the commonly seen dystrophic and nodular pulmonary ossification, seen in patients with end-stage renal or heart disease, DPO is a much rarer entity, with an estimated prevalence of 0.5%, typically known to have an association in older male patients with fibrosing ILD. Although chronic cardiac congestion may have contributed to secondary ossification, it is not known to be the dendriform subtype. Differentials including pulmonary alveolar microlithiasis, metastatic ossification, and granulomatous diseases were excluded by imaging and pathology. No treatment was required, and monitoring is typically completed with serial CT imaging for 1 year.

**Conclusion:** This case highlights the importance of considering DPO in patients with chronic cardiopulmonary conditions and stable calcified nodules on imaging. Recognition of this rare entity may prevent unnecessary interventions and guide appropriate management.

## A case of endobronchial pulmonary leiomyoma treated with electrocautery and cryotherapy

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**Introduction:** Benign pulmonary leiomyomas are a rare disease that can cause varying degrees of obstruction and symptoms. The predominant symptoms include cough, wheeze, and hemoptysis. Given the potential for tumor growth, intervention is indicated to prevent morbidity. We describe a case of pulmonary endobronchial leiomyoma successfully resected with both heat and freezing based modalities.

**Case Description:** A 59-year-old female presented in the outpatient setting with symptoms of mild intermittent cough and exertional dyspnea. The medical history included endometriosis and childhood asthma. Hematologic testing was unremarkable, including autoimmune testing and inflammatory markers. Initial pulmonary function testing was notable for positive bronchodilator challenge. Computed tomography of the chest demonstrated an obstructing lesion in the right upper lobe. Bronchoscopy was performed and confirmed a pink, pedunculated obstructing lesion in RB3, which was resected with both an electrocautery snare and 1.7-mm cryoprobe. Pathologic examination revealed a smooth-muscle neoplasm with immunohistochemical stains positive for desmin and SMA, and negative for EBV, ALK, and WT1. A diagnosis of symptomatic benign endobronchial leiomyoma was made. Following intervention and recovery from the procedure, the patient noted a significant and durable improvement in her symptoms.

**Discussion:** Traditionally, surgical approaches were favored for treatment of endobronchial leiomyomas, but, more recently, the favored treatment approach is to pursue bronchoscopic debulking and removal. In our case, an approach combining electrocautery snare as well as 1.7-mm cryoprobe was used to remove the lesion *en bloc*. The application of the electrocautery snare is not commonly described in the literature regarding the management of leiomyomas, but, in this case, it was utilized successfully.

## Severe *Aspergillus niger* necrotizing pneumonia, A case report

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**Case Report:** Details a rare and aggressive instance of necrotizing pneumonia caused by *Aspergillus niger* in a middle-aged Hispanic male with preexisting conditions of diabetes, hypertension, and chronic smoking. The patient presented with a 3-day history of productive cough, shortness of breath, and significant unintentional weight loss, indicative of a severe, chronic illness. Upon admission, a CT scan revealed concerning cavitary lung lesions and multifocal tree-in-bud nodularities, initially prompting suspicion of atypical infections like tuberculosis or aspergilloma. Despite prompt initiation of broad-spectrum antibiotics and an extensive diagnostic workup, including bronchoscopy, the patient's condition rapidly deteriorated into septic shock and acute hypoxic respiratory failure, necessitating ICU admission, intubation, and mechanical ventilation. Sputum cultures ultimately identified *A. niger* as the causative agent, ruling out tuberculosis, *Legionella*, and HIV. The patient was immediately started on the antifungal drug voriconazole. However, the infection proved unresponsive to treatment, and his condition continued to worsen, progressing to multiorgan failure. Despite interventions like embolization, the patient tragically succumbed to the infection on day 6.

**Conclusion:** This case underscores the challenges in diagnosing and managing severe pulmonary fungal infections, particularly in immunocompromised or critically ill individuals. The aggressive nature of *A. niger* in this patient, coupled with its resistance to voriconazole, highlights the potential for rapid progression and poor outcomes, even with prompt medical intervention. The report emphasizes the critical need for early recognition, multidisciplinary care, and swift intervention in such complex and challenging cases.

## All that glitters is not G.O.L.D.: Evaluation of pulmonary embolism as a cause of persistent hypoxia in a patient with a COPD exacerbation

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**Introduction:** Chronic obstructive pulmonary disease (COPD) is associated with morbidity and mortality worldwide, with exacerbations contributing to increasing mortality rates. Recent studies have found a significantly increased prevalence of pulmonary embolism (PE) diagnoses in COPD exacerbations.

**Case Presentation:** Our patient was an 85-year-old male with a medical history of COPD (GOLD group E, unknown PFTs) and tobacco use who presented with worsening dyspnea and cough, admitted for acute hypoxic hypercapnic respiratory failure secondary to a COPD exacerbation with proposed etiology of rhinovirus and superimposed bacterial infection with *Serratia liquefaciens* on culture. He was initially managed with noninvasive positive pressure ventilation, antibiotics, steroids, and inhaled therapies. Despite treatment, he remained profoundly hypoxemic through 4 days of hospitalization. He was, additionally, found with a hemoglobin persistently > 18, later found with a low erythropoietin level suggestive of primary polycythemia. His modified Wells score was 0 for PE with D-dimer of 0.80. Given a borderline age-adjusted D-dimer and persistent hypoxia with pleuritic chest pain and clinical suspicion, CT-angiography was obtained, demonstrating PE of segmental and subsegmental branches of the bilateral lower lobes and right middle lobe without evidence of acute right heart strain. His clinical status improved to his baseline supplemental oxygen following anticoagulation.

**Conclusion:** This case reflects the importance of clinical suspicion regarding a differential diagnosis of PE with severe refractory hypoxemia in a COPD exacerbation. While not part of traditional risk algorithms, COPD is an independent risk factor for development of PE in addition to risks posed with exacerbation as well as polycythemia. Studies have, additionally, documented risk for delayed diagnosis of PE in patients with chronic lung disease. Ultimately, this case reflects that, in patients with COPD with persistent severe hypoxia despite treatment, evaluation for PE should be strongly considered.

## A rare case of plastic bronchitis unmasking follicular lymphoma

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**Introduction:** Plastic bronchitis is a rare condition characterized by the formation and expectoration of bronchial casts. While it is occasionally seen in adults, it is more common in children, particularly after surgical correction of congenital heart defects, which can lead to lymphatic leakage into the airways. In adults, the condition is often due to abnormal pulmonary lymphatic drainage, causing lymphatic cells, proteins, and fats to accumulate in the bronchial tree. Plastic bronchitis has also been associated with infections, cystic fibrosis, sickle cell anemia, and amyloidosis. We present a rare adult case of plastic bronchitis secondary to a previously unreported etiology.

**Case:** A 42-year-old woman with a history of childhood asthma and prior tobacco use was admitted with a 1-month history of productive cough, dyspnea, and expectoration of bronchial casts. She had previously been treated for pneumonia without improvement. The vitals were unremarkable. Laboratory tests revealed leukocytosis and elevated inflammatory markers, with negative infectious and autoimmune workup. A chest CT showed bilateral ground-glass opacities and mediastinal lymphadenopathy. Bronchoscopy revealed casts in the right middle and left upper lobes, which were removed. Pathology showed fibrinopurulent exudate rich in lymphocytes. The patient improved with steroids and nebulized therapy but relapsed after steroid taper. Repeated imaging revealed persistent lymphadenopathy. Lymph node biopsy was performed, and a lymphangiogram demonstrated lymphatic drainage into the bronchial veins. Thoracic duct embolization resulted in complete resolution of respiratory symptoms. Lymph node pathology revealed follicular lymphoma. She has had no recurrence of symptoms on follow-up.

**Conclusion:** This case underscores the importance of considering plastic bronchitis in adults with unexplained bronchial cast formation. Lymphangiography may aid in

diagnosis, while thoracic duct embolization offers a definitive treatment. To our knowledge, this is the first reported case of plastic bronchitis as the presenting manifestation of previously undiagnosed follicular lymphoma.

## Hidden in plain sight: A case of severe EVALI unmasked by ICU course and contraband

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**Introduction:** E-cigarette or vaping product use–associated lung injury (EVALI) is a diagnosis of exclusion characterized by hypoxemic respiratory failure, diffuse pulmonary infiltrates, and vaping history. While it typically presents subacutely, severe cases may mimic pneumonia or ARDS, complicating diagnosis and delaying appropriate intervention.

**Case Presentation:** A 69-year-old man with a history of COPD, atrial fibrillation, and alcohol use disorder presented with dyspnea. Imaging revealed right lower lobe infiltrates concerning for pneumonia. Despite broad-spectrum antibiotics, he developed worsening hypoxic respiratory failure, requiring intubation. A chest CT showed diffuse bilateral ground-glass opacities with fibrotic features. Laboratory test results revealed leukocytosis (WBC 22), anemia, and hypernatremia. Infectious and autoimmune workups were negative. Despite high ventilator settings and steroids for suspected ARDS, his course remained protracted. Three vape devices were discovered in his hospital room; the family later confirmed chronic vaping. The diagnosis of EVALI was made retrospectively, supported by clinical exclusion, imaging, and history. He was managed supportively with lung-protective ventilation, corticosteroids, and empiric antibiotics, with eventual improvement in oxygenation.

**Discussion:** This case illustrates a severe, initially unrecognized case of EVALI that progressed to ARDS. The initial overlap with pneumonia, systemic inflammation, and a lack of disclosed vaping history delayed recognition. CT findings of diffuse ground-glass opacities with subpleural reticulation further supported the diagnosis.

**Conclusion:** EVALI should be considered in all cases of unexplained hypoxemic respiratory failure, particularly when imaging suggests diffuse alveolar injury. A detailed social history and high clinical suspicion are essential, especially in critically ill patients where vaping may be underreported.

## Foreign body pulmonary granulomatosis in a poor historian

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**Introduction:** Foreign body pulmonary granulomatosis is a rare and often underrecognized complication associated with intravenous injection of crushed oral medications containing insoluble excipients such as microcrystalline cellulose and crospovidone. An accurate diagnosis is frequently hindered by unreliable patient histories.

**Methods:** A 43-year-old female with a self-reported history of sickle cell anemia presented with generalized weakness, severe arthralgias, and fever. The patient reported leaving another hospital against medical advice after starting antibiotics for an infected port, which was removed. She was admitted for presumed sickle cell crisis, requiring a blood transfusion and antibiotic treatment for reported bacteremia. Due to poor peripheral access, a femoral central line was placed. Over several days, she became more tachypneic and tachycardic, prompting chest imaging. CT angiography showed innumerable micronodular opacities with a miliary distribution. Several attempts were made to obtain prior hospital records from all reported admissions.

**Results:** Eventually, a wedge resection was performed with pathology, revealing numerous intravascular and parenchymal foreign body granulomas containing polarizable material consistent with tablet excipients. Associated findings included giant cells, intra-alveolar macrophages, and reactive lymphadenopathy with negative cultures. A sickle cell screen and other associated blood tests were negative.

**Discussion:** Pathologic findings were consistent with intravenous injection of oral opiates *via* central venous access, confirmed through subsequent discovery of medical and identity fraud as well as evidence of prescription misuse *via* EFORCSE (PDMP). This case underscores the challenge of relying on patient-reported history, especially in the absence of verifiable records, and highlights the importance of maintaining a broad differential diagnosis in unexplained pulmonary presentations.

**Conclusion:** This case illustrates the need for clinical vigilance in identifying noninfectious pulmonary complications of intravenous drug abuse, particularly when clinical data and patient history are incongruent.

## The lost noodle: An unusual case of tracheobronchial aspiration

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**Introduction:** Tracheobronchial foreign body aspiration in adults is uncommon and often presents with nonspecific respiratory symptoms, which can delay diagnosis and treatment. Risk factors include neurologic deficits and dysphagia, especially in the elderly. We report a unique case of a man who unknowingly aspirated a noodle.

**Case Presentation:** A 73-year-old male with cervical cord myelomalacia and atrial fibrillation on apixaban, slipped and fell while cutting trees and landed on the left side of his chest. Over the next 5 days, he developed worsening chest pain, cough, and dyspnea. Computed tomography of the chest revealed nondisplaced left-sided rib fractures and a long, linear, radio-opaque structure, extending from the trachea into the right mainstem bronchus. He also had chronic cervical spinal cord myelomalacia with bilateral hand paresthesia for which neurosurgery recommended stabilization with a neck collar. Upon questioning, the patient did recall eating noodles while cutting trees. A flexible bronchoscopy revealed an ~15-cm-long, soft, and fragile noodle adherent to the respiratory mucosa, which was effectively removed in pieces by using suction. The patient recovered without pulmonary or neurologic complications.

**Discussion:** Foreign body aspiration in adults accounts for only 0.2–0.33% of bronchoscopies. Presentation is often subtle, especially in the elderly, and may lack a witnessed aspiration event. Food items such as bones, seeds, and nuts are the most common aspirated materials. However, aspiration of a noodle, a soft, linear object, has not previously been reported in adults. The right bronchial tree is a frequent site of lodgment due to its anatomy. Flexible bronchoscopy remains the standard of care for diagnosing and removing foreign bodies, with high success rates and minimal complications.

## Bone pain and biochemistry: When electrolytes tell the tumor story

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**Introduction:** Electrolyte disturbances such as hyponatremia are common paraneoplastic features of small cell lung cancer (SCLC), typically due to syndrome of inappropriate antidiuretic hormone secretion (SIADH). In contrast, severe hypophosphatemia is a rare and underrecognized manifestation, with limited literature linking it to malignancy. Hypophosphatemia may result from poor intake, gastrointestinal losses, or intracellular shifts but can also reflect tumor-induced metabolic derangements. We present a case of a woman admitted for right lower lobe pneumonia who was found to have profound hyponatremia, hypophosphatemia, and bone pain. Further evaluation revealed SCLC. This case highlights the importance of considering occult malignancy in patients with unexplained or persistent electrolyte abnormalities.

**Case Presentation:** A 65-year-old woman presented to the emergency department with malaise and diffuse body aches following recent travel and outpatient treatment for "walking pneumonia." She was admitted with profound hypophosphatemia and hyponatremia in the setting of recent nausea, vomiting, and diarrhea, initially attributed to a viral illness and right lower lobe pneumonia. Her phosphate levels dropped further after nutritional support, raising concern for refeeding syndrome, though the clinical picture was not fully consistent. The next day, she developed severe chest and back pain. CT angiography of the chest revealed a 2.8-cm right lower lobe nodule, mediastinal lymphadenopathy, and thoracic vertebral involvement. Endobronchial ultrasound-guided biopsy-confirmed SCLC. This case underscores the need for further evaluation when unexplained electrolyte disturbances and pain accompany presumed benign respiratory infections.

**Discussion:** Hyponatremia is a well-known paraneoplastic feature of SCLC, but severe hypophosphatemia is rarely reported. In SCLC, hypophosphatemia may result from tumor-induced overproduction of fibroblast growth factor 23 (FGF23), leading to renal phosphate wasting. This patient's profound hypophosphatemia, initially thought to be refeeding syndrome, was instead related to this paraneoplastic process. Recognizing hypophosphatemia as a potential paraneoplastic sign may aid in earlier diagnosis of underlying malignancy.

**Conclusion:** Clinicians should consider malignancy in patients with unexplained electrolyte abnormalities and new-onset bone or chest pain. Recognizing paraneoplastic

manifestations may facilitate timely diagnosis and treatment. Further studies are needed to clarify the mechanisms and implications of hypophosphatemia and cancer-related pain.

## The face-off between two mimics: Lupus and tuberculosis

Fnu Swatisikta, M.D.

**Introduction:** Both lupus and *Mycobacterium tuberculosis* can affect any organ and can present with nonspecific multiorgan involvement. In a patient with lupus, it may be difficult to distinguish between a lupus flare and a mycobacterial infection.

**Case:** A 28-year-old female with a history of systemic lupus erythematosus (SLE), (anti-Smith and ds-DNA positive), presented with knee swelling and chest and abdominal pain. She had elevated inflammatory markers, hyperkalemia with AKI. CT chest showed bilateral lung micronodules and patchy opacity. The patient had been on long-term steroids, mycophenolate, and hydroxychloroquine. Belimumab and voclosporin were initiated after a recent kidney biopsy revealed class 4 lupus nephritis. She underwent diagnostic knee arthrocentesis and was started empirically on broad-spectrum antibiotics and antifungals. Over 48 hours, the patient developed pancytopenia and worsening hypoxia despite improving renal function. She was given pulse steroids and transferred to the ICU for elective intubation and bronchoalveolar lavage (BAL). She subsequently developed acute respiratory distress syndrome (ARDS) and bilateral pneumothorax, necessitating bilateral intercostal drains. BAL returned positive for *M. tuberculosis*, and antituberculosis therapy was initiated. Persistent hypoxia necessitated extracorporeal membrane oxygenation (ECMO), and worsening renal function required hemodialysis. Despite the GM-CSF, the patient had persistent severe pancytopenia and coagulopathy, requiring massive transfusions. Even on ECMO she remained hypoxic and succumbed to multiorgan failure.

**Discussion:** The patient had a history of difficult-to-control lupus on long-term immunosuppressants, making both lupus flare and infection possible etiologies of presentation. Elevated inflammatory markers warranted broad antimicrobials, including antifungals. She had recently started belimumab, increasing her risk for mycobacterium reactivation. Although BAL confirmed tuberculosis, the outcome was influenced by the underlying lupus and prolonged immunosuppression. The question is, would empiric antitubercular therapy have altered the outcome? Though current guidelines require testing for only hepatitis B and C before starting belimumab, should we routinely screen for latent mycobacterium infection before starting belimumab?

## When coffee isn't enough: An underrecognized association between obstructive sleep apnea and stimulant use disorder

Ryan Cobb, D.O., Mildred Barnett, M.D., and Kevin Patel, M.D.

**Introduction:** Although obstructive sleep apnea (OSA) has been associated with alcohol use disorder, limited data exist on its relationship with other substance use disorders, particularly stimulant use disorder. We examined 15 patients enrolled in an acute substance use rehabilitation program with a diagnosis of stimulant use disorder to determine the prevalence of OSA in this population and assess whether OSA severity correlated with length of stay in acute rehabilitation.

**Methods:** A chart review was conducted on 15 patients diagnosed with stimulant use disorder and admitted to an acute rehabilitation program at the James A. Haley VA Hospital between June 2024 and January 2025. Length of stay was compared between patients with and without OSA, using an unpaired *t*-test. Differences across OSA severity groups were analyzed by using one-way ANOVA.

**Results:** Of the 15 patients reviewed, 8 (53%) had an established diagnosis of OSA confirmed by home portable sleep study or in-lab polysomnography. None of these patients received treatment for OSA during their rehabilitation stay. Among those who completed the program, the average length of stay was longer in patients with OSA (50.5 days) than in those without OSA (40.3 days), though not statistically significant ($p = 0.23$). In addition, a positive trend was observed between OSA severity and length of stay: mild OSA (41 days), moderate (45.5), and severe (60.5), though also not statistically significant ($p = 0.14$).

**Conclusion:** Although the small sample size is a limitation, this subset showed a higher prevalence of OSA than expected. While differences in length of stay were not statistically significant, trends suggest untreated OSA may negatively impact stimulant use disorder recovery. Larger studies are needed, and greater focus should be placed on identifying and treating OSA in this high-risk population.

## Unmasking pulmonary hypertension in dermatomyositis: a case report

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**Introduction:** Pulmonary hypertension (PH) is characterized by elevated pulmonary artery pressure, leading to right heart strain and potential right heart failure. PH is commonly associated with chronic respiratory diseases and autoimmune disorders, such as dermatomyositis (DM), which can cause PH through vascular inflammation and secondary effects from interstitial lung disease (ILD).

**Methods:** We conducted a retrospective review of a complex case of PH in a patient with DM admitted to the emergency department and reviewed relevant literature from PubMed.

**Results:** A 73-year-old female with chronic sacral and bilateral hip wounds, hypertension, chronic kidney disease (CKD), DM, pulmonary fibrosis, chronic obstructive pulmonary disease (COPD), and heart failure with preserved ejection fraction (HFpEF) presented with recurrent falls, generalized weakness, and right hip pain. She was on 5 L of supplemental oxygen and in no acute distress. Laboratory test results showed leukopenia, anemia, hypokalemia, elevated creatinine, and hypertroponinemia. An electrocardiogram (EKG) showed sinus rhythm with incomplete right bundle-branch block (RBBB) and right ventricular hypertrophy (RVH). A chest x-ray (CXR) showed bilateral interstitial infiltrates, and magnetic resonance imaging (MRI) of the hip was suspicious for osteomyelitis. She was started on intravenous vancomycin, cefepime, and metronidazole. Inflammatory markers for DM flare were negative. Chest computed tomography (CT) revealed progression of ILD with emphysematous changes. Transthoracic echocardiogram (TTE) showed severe PH, with right ventricular systolic pressure (RVSP) of 141 mm Hg, and right heart catheterization confirmed PH with pulmonary vascular resistance (PVR) of 1188 dyn·sec·cm$^{-5}$. On hospital day 4, sildenafil was started. By day 7, she was stable, improving in hip pain, with a plan to continue IV antibiotics. Pulmonology recommended nebulized treprostinil and follow-up chest CT in 6–8 weeks.

**Conclusion:** PH is a serious complication of autoimmune diseases like DM. This case highlights the complexity of managing PH alongside infection, requiring an individualized, balanced approach.

## FIBRONEER-ILD: A randomized placebo-controlled trial of nerandomilast in patients with progressive pulmonary fibrosis (PPF)

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**Introduction:** Progressive disease in individuals with an interstitial lung disease (ILD) other than idiopathic pulmonary fibrosis (IPF) is described as progressive pulmonary fibrosis (PPF). Nerandomilast is an orally administered preferential phosphodiesterase 4B inhibitor with antifibrotic and immunomodulatory properties. The FIBRONEER-ILD trial (NCT05321082) investigated the efficacy and safety of nerandomilast in patients with PPF.

**Methods:** Patients had an ILD other than IPF, >10% lung fibrosis on high-resolution computed tomography, and met criteria for ILD progression within the prior 24 months. Patients were randomized 1:1:1 to receive placebo, nerandomilast 9 mg b.i.d., or nerandomilast 18 mg b.i.d., stratified by use of background therapy (nintedanib) and HRCT pattern (usual interstitial pneumonia [UIP]/UIP-like vs other fibrotic patterns). The primary end point was absolute change from baseline in forced vital capacity (FVC) (mL) at week 52.

**Results:** 1176 patients received ≥ 1 dose of nerandomilast or placebo. At baseline, the mean age was 66.4 years; 55.6% were male; the mean FVC was 70.1% predicted; 43.7% took nintedanib. Adjusted mean (SE) changes in FVC (mL) at week 52 were –165.8 (12.6) in the placebo group, –84.6 (12.7) in the nerandomilast 9-mg b.i.d. group (difference vs placebo: 81.1 [95% CI, 46.0–116.3]; $p < 0.001$) and –98.6 (12.8) in the nerandomilast 18-mg b.i.d. group (difference vs placebo: 67.2 [95% CI, 31.9–102.5]; $p < 0.001$). Over 52 weeks, adverse events led to treatment discontinuation in 10.2%, 8.1%, and 10.0% of the placebo, nerandomilast 9 mg b.i.d., and nerandomilast 18 mg b.i.d. groups, respectively. The most frequent adverse event was diarrhea, reported in 24.7%, 29.5%, and 36.6% of the placebo, nerandomilast 9-mg b.i.d., and nerandomilast 18-mg b.i.d groups, respectively.

**Conclusion:** In the FIBRONEER-ILD trial in patients with PPF, nerandomilast reduced FVC decline over 52 weeks and had a favorable safety and tolerability profile.

**Funding:** Boehringer Ingelheim

## FIBRONEER-IPF: A randomized placebo controlled trial of nerandomilast in patients with idiopathic pulmonary fibrosis (IPF)

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**Introduction:** Idiopathic pulmonary fibrosis (IPF) is characterized by progressive decline in lung function and high mortality. Nerandomilast is an orally administered preferential phosphodiesterase 4B inhibitor with antifibrotic and immunomodulatory properties. The FIBRONEER-IPF trial (NCT05321069) investigated the efficacy and safety of nerandomilast in patients with IPF.

**Methods:** Patients had IPF, with a usual interstitial pneumonia (UIP) or probable UIP pattern on high-resolution computed tomography. Patients were randomized 1:1:1 to receive placebo, nerandomilast 9 mg b.i.d., or nerandomilast 18 mg b.i.d., stratified by background therapy (nintedanib/pirfenidone vs neither). The primary end point was absolute change in FVC (mL) at week 52.

**Results:** 1177 patients received ≥ 1 dose of nerandomilast or placebo. At baseline, the mean age was 70.2 years; 83.0% were male; the mean FVC was 78.2% predicted; 45.5% took nintedanib; 32.3% took pirfenidone. Adjusted mean changes in FVC (mL) at week 52 were –183.5 with placebo, –138.6 with nerandomilast 9 mg b.i.d. (difference vs placebo: 44.9 [95% CI, 6.4–83.3]; $p = 0.02$) and –114.7 with nerandomilast 18 mg b.i.d. (difference vs placebo: 68.8 [95% CI, 30.3–107.4]; $p < 0.001$). Both doses of nerandomilast reduced FVC decline versus placebo in patients taking nintedanib or no background therapy, but only the 18-mg b.i.d. dose reduced FVC decline in patients taking pirfenidone, as plasma levels of nerandomilast were reduced by ~50% in these patients. Adverse events led to treatment discontinuation in 10.7%, 11.7%, 14.0% of the placebo, nerandomilast 9-mg b.i.d., nerandomilast 18-mg b.i.d. groups, respectively. Diarrhea was the most frequent adverse event, reported in 16.0%, 31.1%, and 41.3% of the placebo, nerandomilast 9-mg b.i.d., and nerandomilast 18-mg b.i.d. groups, respectively.

**Conclusion:** In the FIBRONEER-IPF trial, nerandomilast reduced FVC decline over 52 weeks in patients with IPF, with a favorable safety and tolerability profile.

**Funding:** Boehringer Ingelheim

## Relationship between blood eosinophil count and small airway dysfunction identifies potential asthma endotypes in the ATLANTIS study

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**Introduction:** High and low type 2 (T2) asthma endotypes are previously well described. Small airway dysfunction (SAD) also contributes to the clinical manifestations of asthma. In this study, we investigate the combined effect of T2 inflammation and SAD on clinical phenotypes related to asthma severity.

**Methods:** High/low T2 asthma were defined as blood eosinophil count (BEC) ≥ 300 and < 300 cells/$\mu$L, respectively. Clinical high/low SAD clusters were generated in the AssessmenT of smalL Airways involvemeNT In aSthma (ATLANTIS) study. Association analyses of clinical phenotypes and four groups categorized by the combination of high-low T2 asthma and high-low SAD clusters were performed by using generalized linear models.

**Results:** Asthma patients in the ATLANTIS study ($n$ = 727) were grouped into HH (high BEC and high SAD; $n$ = 114), HL (high BEC and low SAD; $n$ = 141), LH (low BEC and high SAD; $n$ = 172), and LL (low BEC and low SAD; $n$ = 300). The high T2 groups had significantly higher FeNO levels and sputum % eosinophils than two low T2 groups (HH versus LH or HL versus LL; $p \leq 0.0001$); The high SAD groups had significantly higher % predicted R5-20 (resistance of small- to-mid-sized airways), AX (area of reactance), X5 (reactance of more central, conducting small airways at 5 Hz) than the low SAD groups ($p < 0.0001$); both high T2 and high SAD scores contributed to lower baseline % predicted $FEV_1$, higher % of severe asthma, and higher % of prospective exacerbations in 1 year (HH: 36%; HL: 14%; LH: 19%; LL: 12%). In general, high SAD scores showed stronger effect than high T2 on these variables.

**Conclusion:** T2 inflammation and SAD reflect two independent facets of asthma severity. The combination of high T2 and high SAD leads to a more severe asthma endotype.

**Funding:** Chiesi

## Current clinical and economic burden of difficult-to-treat or severe asthma

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**Introduction:** Asthma is one of the most significant noncommunicable diseases globally, with a prevalence of 5%-10%, depending on the country and the age group. Among asthma cases, 17% are classified as difficult to treat, of which 3.7% are considered severe asthma (SA). The objective of this review was to understand the current humanistic and economic burden of SA in the U.S.

**Methods:** A literature review using Embase, MEDLINE, and relevant conference publications was performed to identify recent, relevant studies with either severe or difficult-to-treat asthma between November 2019 and November 2023. Twenty-four studies were identified with 7 reporting on health-related quality of life (HRQoL), 9 on exacerbations, 11 on health-care cost, and 16 on health-care resource utilization (HCRU).

**Results:** Our results indicated that in U.S. adults ($N$ = 7820) with a self-reported diagnosis of asthma from 2015 and 2016 National Health and Wellness Surveys, 38% were not well controlled (20.1% were partially controlled and 17.4% were poorly controlled) **0.4** In the U.S. adults ($n$ = 774) with physician-diagnosed asthma and self-reported inhaled corticosteroid (ICS) use in the previous 4 weeks, 53% were not well controlled. Uncontrolled and SA significantly impacted HRQoL. Significantly more health-care practitioner (HCP) and emergency department (ED) visits, and hospitalizations were reported in patients with partially or poorly controlled asthma versus well-controlled asthma ($p < 0.001$)**0.4** Exacerbations or high rescue medication use were key drivers of increased costs, and allergen sensitization increased economic burden in adolescents. Patients with SA incurred significantly higher direct and indirect costs compared with nonsevere or controlled asthma.

**Conclusion:** Difficult-to-treat SA clearly has a significant impact on patient HRQoL and productivity, despite available treatments. Furthermore, difficult-to-treat SA is also associated with a disproportionate economic burden versus less SA, with both costs and HCRU rising with greater disease severity.

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## Combined pulmonary fibrosis with emphysema: A bird-exposure nightmare

Cinthia Reyes, M.D., Andrew Rennick, M.D., Daniela Tejada, M.D., and Randall Schwartz, M.D.

**Introduction:** Hypersensitivity pneumonitis (HP) is an immune-mediated interstitial lung disease (ILD) caused by inhaled environmental antigens, such as bird proteins. While chronic HP can lead to fibrotic ILD, progression to combined pulmonary fibrosis and emphysema (CPFE) is rare and poorly understood. CPFE typically affects older adults with a history of smoking and is characterized by upper lobe emphysema and lower lobe fibrosis. When associated with HP, CPFE usually develops slowly over time.

**Case Description:** A 75-year-old man with a 30 pack-year smoking history, and recent bird exposure presented with persistent nonproductive cough and abnormal chest CT findings. Suspected acute HP led to prednisone initiation, but his symptoms worsened, including progressive dyspnea and chills. Repeated imaging showed persistent infiltrates, prompting hospitalization for further evaluation. Bronchoscopy was negative for infection and malignancy; autoimmune testing was unremarkable. He was treated with antibiotics and steroids, and discharged but returned shortly after with worsening symptoms, hypoxia, and leg edema. Imaging revealed extensive bilateral ground-glass opacities and reticulations. His condition rapidly deteriorated, requiring ICU admission and intubation. Despite antibiotics, diuretics, and high-dose steroids, he failed to improve. A wedge biopsy showed CPFE with features of chronic HP, including interstitial thickening, desquamated macrophages, subpleural scarring, and bronchiectasis. Cultures and cytology were negative. Treatment with mycophenolate mofetil was unsuccessful, and care was withdrawn per his family's wishes.

**Discussion:** This case illustrates a rare and rapidly progressive transformation of hypersensitivity pneumonitis into CPFE, likely driven by antigenic exposure

exacerbated by the patient's significant smoking history. Although CPFE is well recognized, its acute emergence in the context of recent HP is uncommon. This case highlights the need for heightened clinical suspicion for CPFE in patients with environmental exposures and smoking history. The absence of effective therapies for CPFE further reinforces the importance of early identification and environmental antigen avoidance.

## Bird fancier's lung: Hypersensitivity pneumonitis in a young female with domesticated pigeons for emotional support

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**Introduction:** Hypersensitivity pneumonitis (HP) is an immunologic reaction to inflammation occurring within the pulmonary parenchyma due to an inhaled agent. Bird fancier's lung refers to a rare type of hypersensitivity pneumonitis caused by prolonged or repeated exposure to avian species and is one of the most reported causes of hypersensitivity in children and younger adults.

**Case Report:** A 25-year-old female with a PMH of obesity and vaping presented with complaints of dyspnea, cough, wheezing, fatigue, and malaise ongoing for at least the past 6 months. The patient is an avid bird lover and has ~18 adult diamond doves with nestlings and fledglings. The initial evaluation was significant for hypoxemia, requiring 4 LPM supplemental oxygen *via* nasal canula, nonproductive cough, and faint coarse breath sounds in bilateral lower lung fields. CT chest demonstrated diffuse ground-glass opacities and dependent consolidations in bilateral lungs. Immunological test results were positive for pigeon serum, along with elevated C3 and C4 complement. The patient demonstrated rapid clinical improvement after treatment with steroids and antibiotics. A chest CT before discharge demonstrated complete resolution of previously noted bilateral lung opacities and dependent consolidations. The patient was discharged to home with a short course of steroid and antibiotic treatment, along with strong recommendations to avoid exposure to pigeons.

**Discussion:** Bird fancier's lung is a commonly reported cause of HP. While pigeons are the most common cause of avian HP, other birds such as parakeets, parrots, doves, and cockatiels have also been implicated. A two-hit hypothesis suggests that antigen exposure acts as the inciting factor to a genetically predisposed individual, resulting in inflammation. Treatment approaches involve antigen avoidance and glucocorticoids, meanwhile nintedanib and pirfenidone play a role to slow disease progression in patients with progressive fibrosis with chronic HP. Lung transplantation should also be considered for individuals who develop advanced lung disease due to HP.

## A new era in airway inflammation: Tezepelumab in action

Reem Mumtaz, M.D., Brian Foster, M.D., and Anas Hadeh, M.D.

**Introduction:** Tezepelumab is a monoclonal antibody approved as an add-on therapy for severe asthma, including both eosinophilic and noneosinophilic phenotypes. It blocks thymic stromal lymphopoietin (TSLP), a key cytokine upstream of type 2 inflammation. While primarily indicated for airway inflammation, emerging evidence suggests broader effects, including reduction in mucus plugging and parenchymal inflammation. We present a case of a patient with severe asthma and bronchiectasis who experienced significant clinical and radiographic improvement following tezepelumab initiation.

**Case Presentation:** An 83-year-old man with uncontrolled asthma, bronchiectasis, chronic bronchitis, chronic lymphocytic leukemia, and *Mycobacterium avium-intracellulare* presented with persistent productive cough, wheezing, and dyspnea. CT chest showed mucus plugging, centrilobular nodules, and bibasilar opacities. Pulmonary function testing (PFT) revealed $FEV_1$ 74% predicted, $FEV_1/FVC$ 0.64, DLCO 78% predicted, and TLC 127% predicted. Exhaled nitric oxide (FeNO) was 50 parts per billion (ppb). Despite optimized therapy, including bronchodilators, steroids, antibiotics, and airway clearance, symptoms persisted. Tezepelumab was initiated as a monthly subcutaneous injection. Over the ensuing treatment course, the patient reported substantial symptomatic improvement and cessation of sputum production. Repeated imaging demonstrated near-complete resolution of bibasilar mucus plugging and nodular opacities. PFTs improved ($FEV_1$ 82% predicted, DLCO 100% predicted), FeNO declined to 46 ppb, and sputum culture returned negative.

**Conclusion:** In line with findings from the CASCADE trial, which demonstrated reductions in mucus plug burden among patients receiving tezepelumab, this case highlights its potential to improve not only airway inflammation but also parenchymal changes such as inflammatory nodules and mucus plugging. This may suggest a broader therapeutic role for anti-TSLP biologics in inflammatory airway disease such as bronchiectasis or bronchiolitis.

## Reduction in COPD exacerbations following initiation of benralizumab among patients with asthma and concomitant COPD: Results from the ZEPHYR-5 study

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**Introduction:** This real-world evidence study evaluated the change in COPD exacerbations following initiation of benralizumab among patients with a diagnosis of asthma and concomitant COPD.

**Methods:** This study was a retrospective data base analysis of the MORE$^2$ Registry of commercial claims and the 100% Medicare Fee-for-Service claims data bases spanning 2017–2022. Inclusion criteria were 1) claim for benralizumab and ≥1 refill within 90 days (earliest claim = index date), 2) 12 months of health plan enrollment preceding (baseline) and following (follow-up) index, 3) diagnoses of asthma and COPD, and 4) presence of ≥2 asthma exacerbations during baseline. COPD exacerbations were assessed during baseline and follow-up periods and were classified as either moderate or severe in accordance with the Mapel *et al.* algorithm (2021). The percent change in annual moderate, severe, and total COPD exacerbations were assessed from baseline to follow-up, with paired *t*-tests used to examine statistically significant differences across periods. Subgroup analyses were conducted among patients with blood eosinophil (bEOS) laboratory test result data.

**Results:** A total of 2894 patients with asthma and concomitant COPD were included. Following initiation of benralizumab, the annual rate of total COPD exacerbations decreased 45.6% (3.6 ± 2.5 to 2.0 ± 2.2; $p < 0.001$), while the proportion of patients with ≥ 4 COPD exacerbations decreased from 43.0% during baseline to 19.0% during follow-up. The total number of severe COPD exacerbations decreased 59.7% following the initiation of benralizumab, from 0.16 ± 0.55 to 0.07 ± 0.33; $p < 0.001$. Subgroup analyses of the bEOS groups revealed greater reductions in total COPD exacerbations post-benralizumab among patients with higher bEOS levels (bEOS < 150/μL; 27.8%; bEOS 150–299/μL, 42.2%; bEOS ≥ 300/μL, 50.8%).

**Conclusion:** Patients with severe asthma and concomitant COPD treated with benralizumab demonstrated meaningful reductions in COPD exacerbations, inclusive of severe events, in a real-world setting. The largest reductions were observed among the patients with the highest eosinophil levels.

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## Rare case of idiopathic pulmonary vein thrombosis treated with rivaroxaban

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**Background:** Pulmonary vein thrombosis (PVT) is a rare clinical entity most commonly associated with underlying conditions such as lung malignancy, post lung transplantation, or atrial fibrillation. Idiopathic PVT, in the absence of known predisposing factors, is exceedingly rare and may present diagnostic and therapeutic challenges.

**Case Presentation:** A 42-year-old male with a significant tobacco use history (20 pack-years) presented with hemoptysis and a chronic cough, which became productive 3 days prior. Computed tomography angiography (CTA) of the chest by using a pulmonary embolism (PE) protocol revealed no arterial thrombi but identified a thrombus in the right lower lobe pulmonary vein. The patient was initially treated with intravenous heparin and transitioned to oral rivaroxaban on hospital day 2. A comprehensive hypercoagulable workup, including tests for autoimmune and hereditary thrombophilias, was unremarkable. Further investigation was negative for other risk factors for pulmonary vein thrombosis. Nine days later, the patient presented with the development of pneumonia, but follow-up imaging has demonstrated resolution of the thrombus.

**Discussion:** This case illustrates a rare instance of idiopathic PVT successfully treated with rivaroxaban, suggesting that direct oral anticoagulants may be a viable therapeutic option in similar cases. Given the potential complications of untreated PVT, which include pulmonary infarction, pulmonary edema, right heart failure, and pulmonary hypertension, early diagnosis and knowing effective anticoagulation are essential. Further documentation of idiopathic PVT cases is critical for developing standardized diagnostic and treatment protocols.

## A delicate balance: Treating MAC in a patient with myasthenia gravis

Abhay Thottassery, M.D., Gabriela Alonso, D.O., Priya Satish, M.D., and W. Dwight Miller, M.D.

**Introduction:** Infections in patients with myasthenia gravis (MG) can be difficult to manage due to the exhaustive list of antibiotics that should generally be avoided. Our case demonstrates the management of pulmonary *Mycobacterium avium* complex (MAC) in a patient with MG, and the important antibiotic choices that led to symptom resolution.

**Case:** A 78-year-old male with COPD, ischemic cardiomyopathy, and MG initially presented with concerns of hemoptysis and intermittent fevers. A workup with an outpatient bronchoscopy and bronchoalveolar lavage (BAL) was positive for MAC. Infectious disease (ID) initially deferred treatment due to stability, but our patient later had more frequent fevers and worsening hemoptysis, leading to hospital admission. He was then initially started on a course of ethambutol, ceftaroline, and cilastin/imipenem. Outpatient antibiotics were later changed to azithromycin, ethambutol, and clofazimine to definitively treat the infection despite risks of potentially causing MG exacerbations. Our patient was serially monitored with forced vital capacity (FVC) and negative inspiratory force (NIF) measurements to prevent any active MG exacerbations. Our patient later tested positive for *Nocardia* on one of his surveillance smears and completed a 6-month course of trimethoprim-sulfamethoxazole (TMP-SMX). After 3 years of antibiotics, we determined our patient was no longer actively infected. Our patient has since been stable on maintenance inhalers and a flutter valve, and has not had a recurrence in symptoms.

**Conclusion:** Our case demonstrates a unique antibiotic regimen to treat pulmonary MAC infection without risking MG exacerbation. The rare yet successful use of clofazimine, ethambutol, and azithromycin demonstrates the need of further investigation into alternate regimens for certain patient populations.

## The diagnostic blind spot of light's criteria: A misclassified case of gouty pleuritis

Chiraag Ashokkumar, M.D., and Payam Nabizadeh-Eraghi, M.D.

**Introduction:** Pleural effusions are traditionally classified as transudative or exudative using Light's criteria. However, chronic loop diuretic therapy can concentrate pleural fluid, falsely lowering pleural protein and LDH, leading to misclassification and delaying diagnosis of underlying conditions. We present a case of gouty pleuritis, demonstrating this diagnostic challenge, and discuss alternative approaches.

**Case Summary:** A 67-year-old male with a history of chronic heart failure presented with progressive dyspnea, chest pain, and bilateral pleural effusions. Over the past year, he had multiple hospitalizations for similar symptoms, with thoracentesis repeatedly yielding pleural fluid classified as transudative by Light's criteria. This led to escalating loop diuretic therapy for presumed CHF exacerbations. During the current admission, thoracentesis drained 1200 mL of pleural fluid. Analysis again indicated a transudative profile (protein 2.5 g/dL, LDH 91 IU/L; serum protein 5.8 g/dL, serum LDH 186 IU/L). Despite continued diuretic therapy, the patient's symptoms persisted, and effusions recurred. The lack of therapeutic response prompted further analysis of the pleural fluid. Microscopy revealed monosodium urate crystals, establishing the diagnosis of gouty pleuritis. Despite lacking typical systemic gout symptoms, crystal identification confirmed the diagnosis. The patient was initiated on colchicine and corticosteroids while diuretics were tapered, resulting in clinical improvement. He was discharged on allopurinol for long-term management.

**Discussion:** Gouty pleuritis is a rare cause of exudative pleural effusion. Chronic loop diuretic therapy can distort pleural fluid biochemistry, falsely producing transudative profiles due to hemoconcentration. While Light's criteria remain highly sensitive, its specificity is limited to 83%. This limitation highlights the need for additional tools like serum-pleural albumin gradient, fluid cholesterol, and pleural NT-proBNP. Persistent effusions with transudative profiles but unexplained symptoms warrant further workup, including crystal analysis and potential pleural biopsy. Integrating clinical, biochemical, and procedural findings is essential to diagnose atypical and unresponsive effusions, enabling targeted therapy.

## When pulmonary nodules are really a fungi

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**Introduction:** Coccidioidomycosis is a dimorphic fungus that is endemic to Southwest United States, Mexico, Colombia, and South America. It is found in dry soil. Central nervous system (CNS) infection is very uncommon, seen in 1–3% of cases. The most common presenting symptom being headache and diplopia. Presented below is a young Hispanic female with CNS coccidiomycosis.

**Case Report:** A 28-year-old female with no immunocompromise or other pertinent medical history who presented to the hospital with worsening fever chills and cough. She had been recently diagnosed in an outside hospital with pulmonary vasculitis and started glucocorticoid therapy. Since her discharge from the outside hospital her symptoms had worsened, requiring repeated hospitalization. A repeated VATS diagnosed her with a fungal infection, and an outside pathologist and titers confirmed coccidioidomycosis. She started on fluconazole and discharged home. She returned to the hospital 3 months later with worsening renal function, seizure-like activity, headaches, and photophobia. She started on amphotericin B and transitioned to itraconazole upon discharge. Coccidiomycosis mainly is a self-limiting pulmonary infection. The worst sequala is CNS involvement, which mainly affects African American males with nearly half being immunocompromised. If left untreated, it is nearly always fatal. Here presented is a case of a young Hispanic woman with no pertinent history that received treatment and was discharged home.

**Conclusion:** This case shows the need to keep fungal infections in the differential diagnosis when one comes from an endemic area because fast treatment will decrease morbidity and mortality.

## Rapidly progressive interstitial lung disease in MDA5-positive dermatomyositis leading to spontaneous pneumomediastinum

Daniel Chacon, Lidice Hernandez, Lewjain Sakr, Oriana Salamo-Colletti, and Nydia Martinez

**Introduction:** We present a case of a 41-year-old male with MDA5-positive dermatomyositis who developed spontaneous pneumomediastinum and subcutaneous emphysema following rapid clinical deterioration of interstitial lung disease (ILD) over a 3-week period. The patient had recently escalated immunosuppressive therapy to intravenous immunoglobulin (IVIG) following failure of prior immunosuppressive regimens. This case underscores the aggressive course of MDA5-ILD and the need for early recognition and timely referral for transplantation evaluation.

**Case Presentation:** A 41-year-old male with MDA5-positive dermatomyositis and ILD presented with acute hypoxia ($SpO_2$ 80–85%). He had recently begun IVIG after limited response to steroids and mycophenolate. Admission imaging showed a small right pneumothorax, diffuse subcutaneous emphysema, and bilateral interstitial opacities. CT imaging revealed extensive pneumomediastinum and subcutaneous emphysema, not seen on previous imaging 3 weeks earlier. He was admitted to the intensive care unit and received a right-sided chest tube, pulse-dose methylprednisolone, and tacrolimus. Given the severity and rapid progression of disease despite therapy, he was transferred to a tertiary care center for lung transplantation evaluation.

**Discussion:** MDA5-positive dermatomyositis is associated with RP-ILD, often presenting with mild muscular symptoms but rapid pulmonary decline. Spontaneous pneumomediastinum and subcutaneous emphysema are rare complications linked to alveolar rupture in fragile, inflamed lung tissue. In this case, the development of air leak syndrome occurred before despite escalation of immunosuppression, indicating disease-driven pathology rather than treatment complication. These findings represent a poor prognostic sign and support urgent evaluation for lung transplantation.

**Conclusion:** This case illustrates the fulminant trajectory of MDA5-ILD. Within 3 weeks, the patient progressed from stable disease to life-threatening respiratory compromise. Early recognition and aggressive intervention, including transplantation evaluation, are essential to improving outcomes in this high-risk population.

## Masked pulmonary hypertension and heart failure in a patient with a high-output arteriovenous fistula presenting as unexplained dyspnea

Bebika Subedi, M.D., Dipen Dhakal, M.D., and Gordon White, M.D.

**Background:** Arteriovenous fistula (AVF) creation lowers peripheral resistance and increases venous return, raising cardiac output. This chronic volume overload may lead to left ventricular hypertrophy, diastolic dysfunction, and high-output heart failure (HF). Pulmonary hypertension (PH) develops due to increased pulmonary flow and pressure, with eventual right ventricular (RV) remodeling and dysfunction. Right heart catheterization studies show that ~31% of patients with AVF and advanced CKD have precapillary PH. High-output HF due to AVF accounts for ~25% of all high-output HF cases, especially with high-flow AVFs.

**Case Report:** A 38-year-old male with end-stage renal disease (ESRD) on hemodialysis presented with dyspnea, peripheral edema, and rapid weight gain. Echocardiography revealed reduced left ventricular ejection fraction (EF 40%) and severe PH (RVSP 103 mm Hg). Right heart catheterization confirmed elevated filling pressures and increased cardiac output. AVF ultrasound demonstrated high flow rates of 2900 cc/minute. Surgical plication of the AVF was performed, leading to reduction in cardiac workload and pulmonary pressures. The patient experienced significant improvement in HF symptoms and PH management postintervention.

**Discussion:** The pathophysiological impact of high-output AVFs on PH and HF shows excessive shunting of blood through the AVF increases cardiac output and preload, contributing to volume overload and elevated pulmonary artery pressures. Long-term follow-up demonstrates that right ventricular dysfunction after AVF creation is linked to increased HF incidence and mortality. Interventions such as AVF banding, plication, or ligation may lower pressures and improve symptoms. Monitoring with echocardiography and catheterization is key for risk stratification and guiding treatment.

**Conclusion:** The literature robustly supports the link between high-output AVF and the development of PH and HF, with clinical and hemodynamic evidence. Surgical modification of AVF flow can effectively reduce cardiac and pulmonary pressures, improving patient outcomes. Comprehensive management strategies are vital for optimizing cardiovascular health in this population.

## When COPD isn't: An unexpected case of Mounier-Kühn syndrome revealed by trauma imaging

Andrew Lamb, D.O., Sophia Vozza, D.O., and Christian Abreu-Ramirez, M.D.

**Introduction:** Mounier-Kühn syndrome (MKS), or tracheobronchomegaly, is a rare congenital disorder characterized by dilatation of the trachea and main bronchi due to atrophy of elastic and smooth-muscle fibers. It is often underrecognized, particularly in nonsmoking patients misdiagnosed with asthma, bronchitis, or COPD. Diagnosis is radiographic and typically delayed until advanced disease or incidental imaging reveals characteristic findings.

**Case Description:** A 45-year-old man with a history of "COPD" presented as a trauma alert after being struck by a heavy machine. He was hemodynamically stable and maintained oxygen saturation of 95% on room air. A burst fracture of T11 was identified. Incidentally, chest CT revealed marked tracheal dilatation (34-mm transverse diameter), bilateral main bronchial enlargement, upper lobe bullous changes, and scattered bronchiectasis. Pulmonary consultation led to a diagnosis of MKS based on imaging and clinical history. The patient, a lifelong nonsmoker, endorsed a longstanding history of productive cough, recurrent respiratory infections, and missed school days in childhood, symptoms never previously linked to structural airway disease. He was started on airway clearance therapy with an Aerobika device, nebulized bronchodilators, and pulmonary hygiene education.

**Discussion:** This case highlights the diagnostic challenge of MKS and the need for heightened clinical suspicion in nonsmokers with unexplained bronchiectasis, recurrent infections, or refractory "COPD." Tracheobronchomegaly is often mistaken for sequelae of smoking-related disease but requires distinct management, including aggressive pulmonary hygiene and monitoring for complications such as recurrent pneumonia, airway collapse, and respiratory failure.

**Conclusion:** Trauma imaging led to the unexpected diagnosis in this patient, illustrating how incidental findings may uncover rare, lifelong pulmonary disease. Awareness of MKS is critical to prevent mismanagement and improve quality of life through targeted care.

## A rare and misunderstood anatomical variant: An azygos lobe

Gordon White, M.D., Mariel Duchow, M.D., Michelle Cheung, D.O., and Diego Marin, D.O.

**Introduction:** This case highlights the incidental finding of an azygos lobe, which is a rare anatomic variant identified on imaging.

**Case Presentation:** A 59-year-old male with a medical history notable for chronic obstructive pulmonary disease (COPD) and Graves' disease was seen in the outpatient pulmonary clinic for follow-up evaluation of recent COPD exacerbations. Due to his extensive smoking history, a computed tomography (CT) scan was obtained, which revealed the presence of an azygos fissure and lobe.

**Discussion:** The azygos lobe does not meet the criterion of a true pulmonary lobe because it lacks an independent bronchial supply. Due to an embryological anomaly involving the posterior cardinal vein, the azygos lobe represents a portion of the right upper lobe. In this variant, the vein deviates from its usual course and penetrates the right upper lobe, forming an accessory fissure that delineates the azygos lobe. Al-Mnayyis et al (2020) evaluated the awareness of the azygos lobe among 227 medical trainees. Of these, only half of radiology trainees could correctly identify the structure, while none of the interns or surgical residents recognized it. These findings highlight an insufficient awareness within the medical community. This lack of knowledge allows the azygos lobe to present diagnostic challenges because it can be mistaken for pathological entities such as bullae, abscesses, pneumothorax, or even lung masses on imaging.

**Conclusion:** Though the azygos lobe is rare and often clinically silent, it holds important implications, especially in terms of misdiagnosis. Greater awareness of this variant is essential to avoid misinterpretation and unnecessary utilization of additional health-care resources.

## Leaving no stone unturned: A case of accelerated silicosis in the age of engineered stone

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**Introduction:** The rising popularity of engineered stone in residential and commercial settings has contributed to silicosis emerging as a significant occupational health issue. The disease is often complicated by diagnostic uncertainty and rapid progression to irreversible damage.

**Case:** We present a case of a 32-year-old male stone fabricator with 6 months of progressive dyspnea and cough after extensive exposure to quartz dust. Initial imaging revealed bilateral infiltrates, mediastinal lymphadenopathy, and enlarged pulmonary artery. Pulmonary function testing revealed severe fixed obstruction and impaired diffusion capacity. Bronchoscopy with bronchoalveolar lavage was neutrophil-predominant. Endobronchial ultrasound-guided lymph node biopsy was negative for malignancy and infection. Definitive tissue diagnosis was obtained through video-assisted thoracoscopic surgical lung biopsy, which showed granulomatous inflammation with necrosis and mediastinoscopy, which showed benign lymph nodes with fibrohistiocytic reaction. The initial pathologic assessment included sarcoidosis, for which empiric corticosteroid treatment was started. However, persistent ambiguity and high degree of clinical suspicion led to the pursuit of tertiary pathology review, which ultimately reached the final diagnosis of silicosis.

**Discussion:** This case illustrates the complexity of diagnosing silicosis, which requires multidisciplinary collaboration among pulmonology, thoracic surgery, radiology, and pathology. Distinguishing it from other granulomatous diseases such as sarcoidosis requires thorough review of occupational history, imaging, and, in some cases, surgical biopsy.

**Conclusion:** The diagnosis of silicosis can be challenging and demands a high index of clinical suspicion, especially in patients with appropriate occupational exposure. As silicosis reemerges as a growing public health concern in the wake of engineered stone popularity, education on workplace protections, robust screening of at-risk workers, early detection by using high-resolution computed tomography, enhanced clinician awareness, and reconsideration of current policies are all critical elements to be addressed.

## Dyspnea after deployment: A diagnostic challenge

Arie Szeinfeld, M.D., Muhammad Rehan, M.D., Yoanna Benitez, M.D., and Kaitlyn Takach, M.D.

**Introduction:** Constrictive (obliterative) bronchiolitis (CB) is a small airway disease characterized by inflammation and fibrosis causing bronchiolar narrowing. While uncommon in healthy individuals, CB has a higher incidence in veterans deployed to Afghanistan, Iraq, and the Persian Gulf. High-resolution CT (HRCT) is a sensitive diagnostic tool, and negative HRCT is often considered exclusionary. We present two biopsy-confirmed CB cases: one with HRCT findings and one without.

**Case Presentation:** Case 1: a 53-year-old male veteran with a history of obstructive sleep apnea (OSA), hypertension, erectile dysfunction, and obesity presented with 6 months of progressive exertional dyspnea. He served in the Persian Gulf with known burn pit exposure. CXR and HRCT were unremarkable. Pulmonary function tests (PFT) demonstrated normal spirometry, lung volumes, diffusion capacity, and airway resistance. Despite negative imaging, a surgical lung biopsy showed fibrous tissue disrupting airway smooth muscle, consistent with CB. Case 2: a 53-year-old male veteran with mild OSA and a 20+ pack-year smoking history was evaluated after incidental HRCT findings during hospitalization for chest tightness. The veteran also reported Persian Gulf deployment and burn pit exposure. CXR was unremarkable. PFTs demonstrated mild nonobstructive airflow limitation, $FEV_1$ 76%, $FEV_1/FVC$ of 74%, with low lung volumes consistent with restrictive changes, and moderately reduced DLCO 54% with

normal oxygenation. HRCT revealed upper and middle lobe air trapping and small pulmonary nodules. A biopsy demonstrated carbon deposits, subepithelial and adventitial fibrosis, and smooth-muscle disruption, confirming CB.

**Discussion:** Post-deployment dyspnea is common and often multifactorial. CB should be considered even when HRCT and PFTs are normal. A thorough history to elicit risk factors for bronchiolar disorders is necessary. Patients can have normal CXR, PFTs, and HRCT. Case 1 underscores that a nondiagnostic HRCT does not exclude CB in high-risk patients. A biopsy remains essential for definitive diagnosis. Further research into the diagnostic yield of HRCT in bronchiolar disorders is needed.

## Advantages of AVAPS in the management of respiratory failure secondary to facioscapulohumeral muscular dystrophy

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**Introduction:** Facioscapulohumeral muscular dystrophy (FSHD) is an autosomal dominant inherited disorder typically affecting facial muscles, followed by shoulders and arms in an asymmetric pattern. The prevalence of FSHD is 3.2–4.6/100,000 individuals. FSHD has been reported to exclusively affect respiration through expiratory muscles, however, other research has demonstrated both diaphragm and expiratory muscles involvement. Progression to respiratory insufficiency develops late in the disease course and contributes significantly to morbidity and mortality.

**Case Presentation:** A 44-year-old woman with PMH of FSHD and wheelchair-bound since 2015, OSA, and lumbar lordosis presented for dyspnea. She was found at home cyanotic and unresponsive, requiring intubation and mechanical ventilation on arrival. Norepinephrine was started for septic shock. A chest CTA demonstrated subsegmental pulmonary embolism and pneumonia, which improved on heparin drip and antibiotics. Initial SBT trials to BiPAP failed due to low tidal volumes and apneic episodes. The patient was successfully extubated to AVAPS (EPAP = 5, IP min = 10/max = 25), which is a reasonable alternative for patients who fail other NIV.

**Result:** The final diagnosis was multifactorial acute hypocapnic respiratory failure. A Dutch study investigating the prevalence of respiratory insufficiency in FSHD found only 1% required home NIV and risk factors identified in this study were loss of ambulation and severe hyperlordosis. Thus, we present an exemplary case, reflecting this literature.

**Conclusion:** Follow up with this patient with Pulmonology and Neurology to assess long-term ventilation requirements and progression of NMD would paint a more robust picture of the use of NIV in FSHD. Although only 1% of patients with FSHD use home ventilation, it may be indicated in a higher proportion of the population and meaning it is imperative to stay vigilant for rarely reported diagnoses affecting respiration.

## Cryptogenic organizing pneumonia mimicking infection in an older adult during the postoperative period

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**Introduction:** Cryptogenic organizing pneumonia (COP) is a rare form of idiopathic interstitial pneumonia, marked by inflammation and fibrotic tissue obstructing the small airways and alveoli. Patients usually develop symptoms gradually, including dry cough, fever, fatigue, and shortness of breath. Its clinical and radiologic resemblance to infectious pneumonia often delays accurate diagnosis, particularly after recent surgery.

**Case Presentation:** An 86-year-old woman with no pulmonary history underwent elective hip replacement. Two weeks later, she presented with fever and chills. Chest imaging showed bilateral ground-glass opacities. She was initially treated for presumed postoperative pneumonia with broad-spectrum antibiotics, but symptoms and radiologic abnormalities persisted. An infectious workup returned negative. Bronchoscopy with biopsy revealed histologic features consistent with organizing pneumonia. Corticosteroid therapy was initiated, leading to rapid clinical and radiologic improvement.

**Discussion:** Typical imaging findings in COP include patchy and sometimes migratory areas of consolidation and ground-glass opacities, often near pleural surfaces or around bronchi. Diagnosis requires exclusion of infections, malignancies, drug reactions, or systemic illnesses. Lung biopsy typically reveals buds of granulation tissue within alveolar ducts and bronchioles. Systemic corticosteroids (*e.g.,* prednisone 0.75–1 mg/kg/day) remain the mainstay of treatment, with tapering over several months. The majority of patients respond favorably, although relapses are not uncommon. This case illustrates the importance of considering COP in patients with unresolving lung infiltrates, especially when occurring after recent hospitalization or surgery.

**Conclusion:** Recognizing COP in postoperative patients with persistent infiltrates is critical. When traditional treatments fail and infections are ruled out, early use of steroids can lead to significant recovery. Collaboration among pulmonologists, radiologists, and pathologists is key for timely diagnosis and management.

## Metastatic lung cancer patient survives ECMO: A case for expanding indications in the era of cancer remission

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**Introduction:** Extracorporeal membrane oxygenation (ECMO) is a life-saving intervention for patients with severe respiratory failure. Traditionally, the presence of advance malignancy has been regarded as a contraindication for ECMO. However, as cancer treatments improve and patients with advanced disease achieve remission, the need to reevaluate these institutional policies should be explored. This case illustrates the successful use of ECMO in a patient with stage 4 lung cancer who presented with ARDS.

**Case Presentation:** A 54-year-old male with a history of stage 4 lung cancer, currently in remission after 3 years of treatment with alectinib, was admitted with a vasovagal syncopal episode, and headache. On day 3 of admission, he was diagnosed with hospital-acquired pneumonia. He was initiated on broad-spectrum antibiotics and oxygen. However, his respiratory condition continued to decline, requiring ICU admission and intubation on day 5. Despite maximum ventilatory support and prone positioning, his condition deteriorated from ARDS. On the third post intubation, his $Pao_2$/FiO2 ratio was 77. At that point, the ICU team discussed with his oncologist and ECMO team, a decision was made to put him on ECMO. On day 4 postintubation, the patient was placed on mobile ECMO and was successfully transported to a dedicated ECMO center. There, the patient remained on ECMO for 13 days before being decannulated. He was finally discharged on 2 L nasal cannula, and he continue working diligently to regain his baseline functional status.

**Discussion:** The successful use of ECMO in this patient highlights the need for a paradigm shift in how we approach advanced cancer patients requiring critical care interventions. This case advocates for a broader application of ECMO and challenges the current contraindications to not consider in advance cancer patients.

## Pulmonary Brucellosis in a Haitian patient requiring V-V ECMO

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**Introduction:** Brucellosis is a bacterial disease caused by the Brucella species. Cattle, swine, goats, and sheep, among other animals, are commonly infected. Humans can also acquire Brucellosis by direct contact with infected animals, eating and drinking contaminated animal products, or by inhaling airborne agents.

**Case Presentation:** A 38-year-old Haitian male with no past medical history presented for shortness of breath, a nonproductive cough, fatigue, and weight loss. Social history was remarkable for growing up in Haiti, moving to the Dominican Republic, and staying in Mexico six months prior to admission in the United States. On arrival, vital signs were stable, and labs were only remarkable for leukocytosis of 11.3. CT chest showed bilateral symmetric, mass-like areas of consolidation with perihilar distribution and bulky mediastinal lymphadenopathy. Infectious workup was negative except for a positive QuantiFERON-gold. Bronchoscopy with EBUS aspiration showed reactive lymph nodes and no evidence of malignancy. He received ceftriaxone and azithromycin for three days and was discharged home with no immediate complications. Six months later, he was readmitted for severe respiratory distress and systemic shock. He was intubated, started on multiple pressors, and empiric antibiotics. He was placed on V-V ECMO due to continued hypoxemia and inability to ventilate. Further history revealed he was traveling with livestock and drinking unpasteurized goat milk in Mexico. Anti-Brucella antibodies were positive for IgM and a serum brucella antibody agglutination titer was greater than 1:80. Doxycycline and gentamycin were started, and clinical improvement was noted for one week. However, after suffering complications of VAP, the patient died.

**Conclusion:** Although brucellosis typically presents as flu-like symptoms, it can involve the pulmonary system. Although rare, it is important to consider pulmonary brucellosis among patients with recent travel or exposure to animals. Serologic testing is diagnostic, and antibiotics are used to treat uncomplicated and complicated infections.

## The physicochemical properties of Anaphylm™ under extreme temperatures and real-world conditions

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**Introduction:** During an emergency allergic reaction, access to and prompt administration of epinephrine correlates with improved patient outcomes. In support, the drug product and packaging must withstand extreme temperatures and real-world conditions resulting from varied lifestyles in which the emergency use medication needs to be available. Anaphylm is a sublingual film that contains a novel prodrug of epinephrine packaged with the intent to support each potential patient use situation.

**Methods:** Packaging and drug product were subjected to temperatures outside of acceptable storage conditions (excursions) followed by long-term storage. Additional testing involved exposure to water submersion and fold endurance. Package integrity and retained drug product potency were evaluated, as were dissolution profiles when either at elevated or freezing temperatures.

**Results:** Potency prior to temperature exposures was 102.2% LC. After exposure to 50°C for 28 days, potency was 97.7% LC and 96.9% LC after 12 months at 25°C/60% RH post-excursion. After exposure to 60°C for 21 days, potency was 97.3% LC and 95.2% LC after 12 months at 25°C/60% RH post-excursion. After exposure to 70°C for 7 days, the potency was 96.6% LC and 91.7% LC after 12 months at 25°C/60% RH post-excursion. When frozen and thawed to 25°C, 40°C, and 60°C, the potency after 12 months at 25°C/60% RH post-excursion was 98.0%, 100.7%, and 99.0%, respectively. When submerged in 25°C water for 7 days or 60°C water for 30 or 60 minutes, no significant change in water content was observed. Fold tests did not reduce packaging integrity or film usability. Dissolution tests immediately after freezing to −80°C or heating to 70°C demonstrated consistent drug release.

**Conclusion:** Anaphylm demonstrated desirable physicochemical properties regarding both packaging and film stability. Performance attributes suggest that Anaphylm has the potential to be a unique epinephrine rescue medication with stability and usability properties not possible with liquid-based epinephrine products.

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